REMARKS

This amendment is supplemental to the amendment under 37 CFR 1.116, filed November 21, 2007.

Claims 14-22 are currently pending in this application. Claims 16-19 stand withdrawn as being directed towards a non-elected invention.

The Applicant thanks the Examiner for the allowance of Claims 14, 15, 20 and 21.

Reconsideration and allowance of the rejected claims are respectfully requested in view of the following remarks.

Examiner Interview

The Applicant thanks the Examiner for the courtesies that were extended to his representatives during the Examiner Interview conducted January 8, 2008.

During the Examiner Interview, the Applicant's representatives argued that the amendment to the specification does not incorporate new matter, as alleged by the Examiner in the final Office Action dated August 23, 2007. Specifically, Applicant's representatives argued that the lines denoted Ra, Ry and Rz are each renamed in the specification to more clearly define the invention, and do not incorporate new matter. In other words, the Applicant asserts that the arithmetical mean deviation from the mean line of the profile (Ra), can also be termed the center line average (Ra). Further, the Applicant asserts that the maximum height (Ry), can also be termed the maximum peak to valley roughness height (Ry). Finally, the ten point average roughness (Rz), can also be termed the ten point height (Rz).

Further, the Applicant's position is that the amendment to the description of the ten point height (Rz) further defines what one of ordinary skill in the art would commonly understand, and that this is not new matter, but rather a mathematical description of the average height of the five highest local maxima plus the average height of the five lowest local minima, as known in the art, and thus does not constitute new matter.

In support of this argument, Applicant's representatives presented an excerpt from the Japanese Industrial Standard, a copy of which is attached hereto, as evidence that the amendment to Ra, Ry and Rz in the specification do not constitute new matter, and that Rz is a mathematical description of the average height of the five highest local maxima plus the average height of the five lowest local minima, as known in the art.

The Examiner agreed with the arguments presented in light of the excerpt from the Japanese Industrial Standard. Furthermore, the Examiner stated that barring any unforeseen issue, a Supplemental Amendment including an attached copy of the excerpt, as provided herein, would result in entry of the amendment.

In addition, the Applicant's position is that the ranges claimed in Claims 16-19, are the same ranges found in original Claims 4, 6, 8, 10 and 13, which were originally examined, and therefore this is evidence that the subject matter in withdrawn Claims 16-19 was originally claimed.

Therefore, the Applicant's representatives requested the entry of the amendment to the specification, the withdrawal of the Election by original presentation of Claims 16-19, and the withdrawal of the written description rejection of Claim 22.

If the Examiner believes that there is any issue which could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact the undersigned attorneys at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 50-0951.

Respectfully submitted,

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〔Technical Data〕

Surface Roughness

Excerpt from JIS B 0601 (1994) and JIS B 0031 (1994)

1. Varieties of Surface Roughness Indicators

Definitions and presentations of arithmetic average roughness (Ra), maximum height (Ry), 10-spot average roughness (Rz), average concave-to-convex distance (Sm), average distance between local peaks (S) and load length rate (tp) are given as parameters indicating the surface roughness of an industrial product. Surface roughness is the arithmetic average of values at randomly extracted spots on the surface of an object.

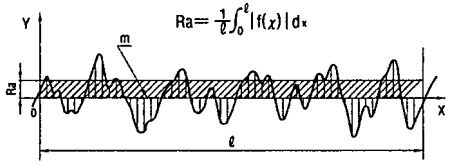
〔Center-line average roughness (Ra 75) is defined in the supplements to JIS B 0031 and JIS B 0601.〕

Typical Calculations of Surface Roughness

Arithmetical Average Roughness, Ra

A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. This portion is presented in a new graph with the X axis extending in the same direction as the average line and the Y axis representing the magnitude. Ra is represented by the equation shown at right, in microns (μm).

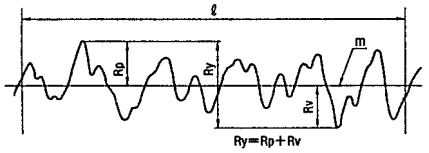
$$Ra = \frac{1}{\ell}\int_0^{\ell} |f(x)|\,dx$$



Maximum Height, Ry

A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. The gap between the peak line and the trough line is measured in the direction in which the magnitude axis extends, in microns (μm).

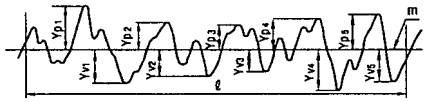
Remark : A portion without an abnormally high peak or abnormally low trough, which may be regarded as a flaw, is cut out over the reference length.



Ry=Rp+Rv

Ten-Spot Average Roughness, Rz

A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. The average of the levels (Yp) of the highest peak to the fifth highest peak as measured from the average line and the average of the levels (Yv) of the lowest trough to the fifth lowest trough similarly measured in the said portion are added together. Rz is this sum, in microns (μm).



$$Rz = \frac{|Yp_1+Yp_2+Yp_3+Yp_4+Yp_5| + |Yv_1+Yv_2+Yv_3+Yv_4+Yv_5|}{5}$$

Yp1, Yp2, Yp3, Yp4, Yp5 : Levels of the highest peak to the fifth highest peak in the said portion with the length ℓ.

Yv1, Yv2, Yv3, Yv4, Yv5 : Levels of the lowest trough to the fifth highest trough in the said portion with the length ℓ.

Reference : Relation between Arithmetic Average Roughness (Ra) and Conventional Parameters

Arithmetic Average Roughness Ra			Max. Height Ry	Ten-Spot Average Roughness Rz	Reference Ry/Rz Length	Conventional Finish Symbol
Standard Series	Cut-Off Value λc (mm)	Graphical Representation of Surface Texture	Standard Series		ℓ (mm)	
0.012 a	0.08	0.012 ~ 0.2	0.05 s	0.05 z	0.08	▽▽▽▽
0.025 a			0.1 s	0.1 z		
0.05 a	0.25		0.2 s	0.2 z	0.25	
0.1 a			0.4 s	0.4 z		
0.2 a			0.8 s	0.8 z		
0.4 a	0.8	0.4 ~ 1.6	1.6 s	1.6 z	0.8	▽▽▽
0.8 a			3.2 s	3.2 z		
1.6 a			6.3 s	6.3 z		
3.2 a	2.5	3.2 ~ 6.3	12.5 s	12.5 z	2.5	▽▽
6.3 a			25 s	25 z		
12.5 a	8	12.5 ~ 25	50 s	50 z	8	▽
25 a			100 s	100 z		
50 a	—	50 ~ 100	200 s	200 z	—	~
100 a			400 s	400 z		

* Interrelations among the three varieties shown here are not precise, and are presented for convenience only.
* Ra : The evaluated values of Ry and Rz are the cut-off values and the reference length each multiplied by five, respectively.

〔Technical Data〕

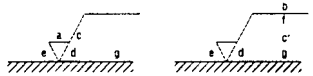
Drawing Indication of Surface Texture

Excerpt from JIS B 0031 (1994)

1. Positions of Auxiliary Symbols for Surface Symbol

A surface roughness value, cut-off value or reference length, processing method, grain direction, surface undulation, etc. are indicated around the surface symbol as shown in Fig. 1 below.

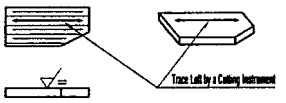
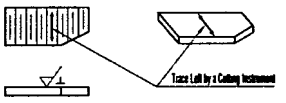
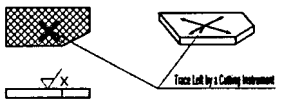
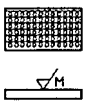
Fig. 1. Positions of Auxiliary Symbols



a : Ra Value
b : Machining Method
c' : Cut-off Value, Evaluation Length
c : Reference Length, Evaluation Length
d : Grain Direction
f : Parameter other than Ra (tp : Parameter/Cut-Off Level)
g : Surface Undulation (according to JIS B 0610)

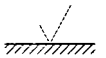
Remark : These symbols except a and f are provided when they are needed.

Remark : Under ISO 1302, a finish range should be indicated as e in Fig. 1.

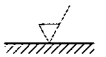
Symbol	Meaning	Illustration
=	The trace left by a cutting instrument is parallel to the projection plane in the drawing. Ex. Shaped Surface	
⊥	The trace left by a cutting instrument is perpendicular to the projection plane in the drawing. Ex. Shaped Surface (Side View) Circular Cut, Cylindrical Cut	
X	The pattern left by a cutting instrument diagonally crosses the projection plane in the drawing. Ex. Honed Surface	
M	The pattern left by a cutting instrument crosses in various directions or has no grain direction. Ex. Lapped Surface, Superfinished Surface and Surface Finished with a Front Mill or End Mill	
C	The pattern left by a cutting instrument is virtually concentric around the center of the plane in the drawing. Ex. Faced Surface	
R	The pattern left by a cutting instrument is virtually radial around the center of the plane in the drawing.	

■Examples

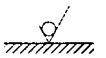
Surface Symbol



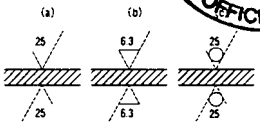
Removal of Material by Machining is Required



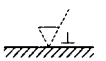
Removal of Material is Prohibited



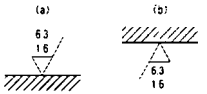
Upper Limit of Ra



Grain Direction



Upper and Lower Limits of Ra



Machining Method